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August 2001

Qatar

Qatar contains the third largest natural gas reserves and the largest non-associated gas field in the world. Qatar is also emerging as a major exporter of liquefied natural gas. An OPEC member, Qatar exports over 800,000 barrels of oil per day.

Note: The information contained in this report is the best available as of August 2001 and may change.



GENERAL BACKGROUND

Since 1995, Qatar has been ruled by Sheikh Hamad bin Khalifa al-Thani. Sheikh Hamad has implemented several changes in policy, including a limited political liberalization creating an elected council and giving women the right to vote. In the economic sphere, Qatar has suffered from many of the same problems as other oil-dependent Persian Gulf states, especially the need to diversify economic development beyond crude oil exports and scale back the generous state subsidies for consumers, which date from the oil boom of the 1970s and early 1980s.

Qatar's real gross domestic product (GDP) grew at an annual rate of 12.0% in 2000. The large rate of growth was prompted by a sharp year-on-year increase in natural gas exports. The projected real GDP growth rate for 2001 is 5.8%, and around 5.9% after 2002, based mainly on expected rises in production and exports of natural gas. Inflation in Qatar remains low, at 2.3% for 2000 and a projected 2.7% for 2001.

Qatar's policy of economic diversification has led to a surge in investment in projects for the export of liquefied natural gas (LNG) and petrochemicals. The government expects that it will be able to earn more per barrel of crude oil produced if it can export refined products and petrochemicals, as well as create private sector jobs - in a country which has been heavily dependent on government ministries

to provide employment for the population.

The main short-term economic problem for Qatar is servicing its debt, which more than doubled from under \$5 billion to over \$10 billion between 1994 and 1996, and edged up further to nearly \$12 billion in 1999. Qatar accumulated this debt largely for infrastructure investment in oil and gas projects, which sharply increased Qatar's oil production capacity, construction of facilities for the export of LNG, and petrochemical plants. Qatar's total debt fell to under \$8 billion in 2000, still more than 80% of the country's GDP.

Qatar recorded a large budget surplus for the 2000/2001 fiscal year, which ended in March 2001. The government for the short term has concentrated on reducing its international debts, rather than increasing public expenditures.

In a ruling issued in March 2001, the International Court of Justice resolved the dispute between Qatar and Bahrain over the Hawar Islands and neighboring islands. Sovereignty over the Hawar Islands was awarded to Bahrain, while Qatar retained the neighboring islands of Zubarah and Janan.

OIL

Qatar has proven, recoverable oil reserves of 13.2 billion barrels. The onshore Dukhan field, located along the west coast of the peninsula, is Qatar's largest producing oilfield. Qatar also has six offshore fields, Bul Hanine, Maydan Mahzam, Id al-Shargi North Dome, al-Shaheen, al-Rayyan, and al-Khalij. Qatari crude oil has gravities in the 24°-41° API range. The country's two primary export streams are Dukhan (41° API) and Marine (36° API) blend. Despite the country's significant oil production and reserves, oil accounts for less than 15% of domestic energy consumption. Qatar exports almost all of its oil production to Asia, with Japan by far its largest customer. In 2000, net oil exports totaled 796,000 barrels per day (bbl/d).

In 2000, Qatar produced 863,000 bbl/d of liquids (including crude oil, natural gas liquids, and condensate), up from 806,000 bbl/d in 1999, and nearly double the 466,000 bbl/d produced as recently as 1994, before Qatar began its rapid expansion of production capacity. As of June 2001, Qatar's monthly crude oil production was averaging 700,000 bbl/d. The country also produces a significant amount of lease condensate and other natural gas liquids (NGLs), both of which fall outside Qatar's OPEC crude production quota, which is set to fall to 601,000 bbl/d effective September 1, 2001 under the agreement reached at the OPEC ministerial meeting in July 2001.

Following the coup in 1995, Qatar initiated a number of new policies aimed at increasing oil production, locating additional oil reserves before existing reserves become too expensive to recover, and investing in advanced oil recovery systems to extend the life of existing fields. To accomplish this, the government in recent years has improved the terms of exploration and production contracts and production sharing agreements (PSA). The improved terms are designed to encourage foreign oil companies to improve oil recovery in producing fields and to explore for new oil deposits.

Onshore Development

In March 1998, Qatar signed an onshore oil exploration agreement with Chevron Corporation. It is a five-year PSA and exploration agreement, covering a 4,209 square-mile area known as Block-2. Block-2 covers virtually all of the Qatari peninsula except for the Dukhan field. Seismic surveys were conducted in 1998, and drilling commenced in 1999. Chevron also holds offshore Block-1 jointly with Hungary's MOL.

Offshore Development

One of Qatar's newer oil fields is al-Rayyan, operated by BP Amoco, which recently acquired Atlantic Richfield Corporation (Arco). Arco took over as operator from Wintershall and began exploration in September 1995. Wintershall, British Gas, and Gulfstream Petroleum also own significant shares. The field came on stream in November 1996, producing 20,000 bbl/d of heavy oil from four wells. It lies

in offshore Block-11 at the southern edge of the North Field near Ras Laffan. The PSA for the field was signed on July 16, 1997. Al-Rayyan has been producing about 25,000 bbl/d in recent months, and BP Amoco and its consortium partners agreed in April 2001 to further development of the field which will bring its production capacity up to 45,000 barrels per day.

Qatar's latest offshore oil field to come onstream is al-Khalij. Production began in March 1997, after five years of exploration and appraisal work, at an initial rate of 6,000 bbl/d. Al-Khalij is located in Block-6, along Qatar's maritime border with Iran, and to the east of the North Field. Development of the field had been delayed since 1991 as Elf Aquitaine Qatar, the field's operator, sought improved production sharing terms from Qatar Petroleum (formerly QGPC). In October 1997, Elf increased production to 20,000 bbl/d. Elf expects to eventually raise production further to 50,000-60,000 bbl/d. Al-Khalij produces a medium/sweet (28° API) oil with about 1% sulphur. The oil is piped to Halul Island for processing and transportation. Elf holds a 55% interest in the 25-year PSA, with an option for a five-year extension. The remaining 45% interest is held by Italy's Agip.

Maydan Mahzam became operational in 1965, and its production is currently slightly under 50,000 bbl/d, which is down significantly from its peak. However, Qatar Petroleum is currently undertaking a renovation intended to extend the life of the field. This work includes plans for 37 new wells over the next decade.

Bul Hanine came on line in 1973, producing well over 100,000 bbl/d, but production began falling off in the early 1990s. Output fell to 120,000 bbl/d in 1991, 90,000 bbl/d in 1993, and slightly under 70,000 bbl/d currently. Development plans to boost production include drilling 86 new wells, and Qatar Petroleum recently announced a tender for work related to gas-reinjection to maintain pressure in the field. Bul Hanine holds approximately 700 million barrels of recoverable reserves.

Al-Shaheen, operated by Maersk Oil Qatar of Denmark, has become one of Qatar's productive oil fields, with production of around 150,000 bbl/d. Located in Block-5 about 43 miles off Qatar's northeastern coast, al-Shaheen produces a sour (29°-33° API) oil with 1.7%-2% sulphur. The field is thought to be linked to a section of the North Field. Maersk agreed in February 2001 to expand the field to a production capacity of 200,000 bbl/d over the next four years. More than 70 new wells are to be drilled.

Id al-Shargi North Dome (ISND), first discovered by Shell in 1960 and now operated by Occidental Petroleum, lies 59 miles east of Qatar's northern tip. In 1994, the field was producing 12,000 bbl/d when Occidental signed a 25-year PSA with Qatar Petroleum, agreeing to invest \$700 million in field development, reservoir repairs, gas and water injection systems, and further exploration. Output from ISND averaged 103,000 bbl/d in 2000.

In December 1997, Occidental signed another PSA with QGPC to develop the Id al-Shargi South Dome (ISSD) oil field. ISSD is located 15 miles from ISND, and Oxy will operate ISSD as a satellite of ISND, keeping overall per-unit operating costs lower. The field came onstream in November 1999 at 11,000 bbl/d. Occidental's ownership interest in ISSD is 44%, and the company plans to invest \$450 million during the life of the project, with \$400 million to be spent over the first five years. ISSD is estimated to contain recoverable reserves of 200 million-300 million barrels.

Downstream

Qatar's National Oil Distribution Company (Nodco) is upgrading its refinery at Umm Said. The upgrade will increase capacity from 57,500 bbl/d to 137,000 bbl/d. A 30,000 bbl/d condensate refining unit came onstream in July 2001, with the rest of the upgrades to be completed by the end of 2001.

In March 1997, QGPC signed a memorandum of understanding (MOU) with the foreign partners of Qatar Liquefied Natural Gas Company (Qatargas) and Ras Laffan Liquefied Natural Gas Company

(Rasgas), providing for construction of a \$400-million, 80,000-bbl/d condensate refinery at Ras Laffan. After its completion in 2002, the plant will process condensate from the two companies' North Field developments. Condensate streams from the North Field contain high levels of mercaptan sulfur compounds and consequently are unable to be processed at most refineries.

In November 1997, Phillips Petroleum Company signed an \$1.1-billion deal with QGPC to build a petrochemical plant, Q-Chem. The plant will have the capacity to produce 500,000 tons per year of ethylene and 467,000 tons per year of polyethylene, including high-density and linear low-density polyethylene. QGPC holds a majority 51% stake in the project, and Phillips holds the remaining 49% stake. The construction contract was awarded to Kellogg Brown & Root in June 1999, and construction is scheduled for completion in August 2002.

NATURAL GAS

With proven reserves of 394 trillion cubic feet (Tcf), Qatar's natural gas resources ranks third in size behind Russia's and Iran's. Most of Qatar's gas is located in the North Field, which contains 380 Tcf of gas in-place and 239 Tcf of recoverable reserves, making it the largest known non-associated gas field in the world. In addition, the Dukhan field contains an estimated 5 Tcf of associated and 0.5 Tcf of non-associated gas. Smaller associated gas reserves also are contained in the Id al-Shargi, Maydan Mahzam, Bul Hanine, and al-Rayyan oil fields. The Qatari government believes that the country's economic future lies in developing this vast gas potential. Currently, Qatar has two liquefied natural gas (LNG) exporters: Qatar LNG Company (Qatargas); and Ras Laffan LNG Company (Rasgas).

The Qatargas downstream consortium comprises QGPC (65%), Total (10%), ExxonMobil (10%), Mitsui (7.5%), and Marubeni (7.5%). In December 1996, the Qatargas venture delivered its first shipment of LNG to Japan. The Qatargas LNG plant consists of three, 2-million-ton-per-year (Mmt/y) (97 billion cubic feet - Bcf) trains. The third train was completed in 1999. Qatargas currently is proceeding with a project to debottleneck its existing liquefaction trains, which is to expand total capacity to 9.2 Mmt/y (446 Bcf). The eventual construction of a fourth train also is planned.

Rasgas is Qatar's second LNG project. The two major shareholders in the project are QGPC and ExxonMobil. Rasgas consists of two 3.3-Mmt/y (163 Bcf) trains. The first train was completed in early 1999, and loaded its first cargo in August 1999 for South Korea's Kogas, which has a supply contract. The second train came onstream in April 2000. The addition of third and fourth trains is planned. Rasgas contracted with Chiyoda, Mitsui, and Snamprogetti in April 2001 for the construction of the third 4.7-Mmt/y (228 Bcf) train, scheduled for completion in 2004, which will be the single largest capacity LNG train in the world.

In May 2000, ExxonMobil and QGPC signed a final development and production sharing agreement for the North Field. The Enhanced Gas Utilization (EGU) project will develop upstream infrastructure in a portion of the field for domestic use, export to neighboring Persian Gulf states, and use as a feedstock for petrochemical projects. The initial phase of the project will produce 500 million cubic feet per day (Mmcfd), with eventual capacity slated to rise to 1.75 Bcf/d.

Qatar's original markets for its LNG exports were Japan and South Korea, the world's two largest LNG importers. India also may become a major market for Qatari LNG, but financial problems with some LNG projects in India, particularly Enron's Dabhol Power Corporation (DPC) have made this questionable. RasGas signed an agreement in July 1999 to supply 7.5 Mmt/y (365 Bcf/y) of LNG to Petronet, another Indian LNG import and gas distribution project in India, beginning in mid-2003. Spain's Enagas also has signed a purchase agreement with Italy's Edison, its first term-contract customer in Europe. Deliveries of 3.5 Mmt/y (170 Bcf) are to commence in 2005.

Another significant proposed project will tie Qatar into the United Arab Emirates (UAE) Dolphin Project, an integrated gas pipeline grid for Qatar, UAE, and Oman, with a possible subsea connection linking Oman to Pakistan. The United Offsets Group (UOG), a UAE state owned corporation backing the project, signed preliminary memorandums of understanding with Qatar, Oman, and Pakistan in

June 1999. Mobil also signed a preliminary agreement in June 1999 for the gas supply from Mobil's production capacity in the North Field. The total project is expected to cost \$10 billion, including costs associated with the development of more extensive gas distribution networks in the UAE and Oman. Qatar initially will sell around 730 Bcf/y of North Field gas, starting in 2005, transported through a pipeline linking the North Field to Abu Dhabi in the UAE. Links between Abu Dhabi, Dubai, and Oman will be added afterwards. UOG announced in March 2000 that TotalFinaElf and Enron had been selected to implement the project, and each would have an equity stake of 24.5%. TotalFinaElf would develop its concession in the North Field to provide gas, while Enron would focus on pipeline development. Enron, however, announced in May 2001 that it was pulling out of the project, and UOG acquired Enron's equity stake. TotalFinaElf has offered to take on a larger share, but UOG is still considering other firms as well. The Dolphin Project has been driven in part by the desire of UAE and Oman to use more natural gas for power generation and industrial use, and the decline in their own production of associated natural gas due to OPEC crude oil production cuts. Pakistan's participation is doubtful, due to its financial condition and the possibility of imports from Iran.

Kuwait also has held discussions with Qatar about the purchase of Qatari gas. A preliminary agreement was signed for gas sales in July 2000, which would source the gas from ExxonMobil's North Field holdings. Details of the project and volumes are still being discussed.

Two Gas-to-Liquids (GTL) projects are under consideration. Qatar Petroleum and Sasol signed an agreement in July 2001 for a 34,000 bbl/d GTL plant at Ras Laffan to be completed by 2005. Foster Wheeler has been engaged to do the initial design work for the plant. ExxonMobil is backing a larger proposed 80,000 bbl/d GTL plant, which could draw on the company's North Field gas production share. A feasibility study is being conducted.

ELECTRICITY

Qatar currently has an electric generation capacity of 1,475 megawatts (MW), and produces 7.6 billion kilowatthours of electricity per year. Most of the country's power plants are natural gas-fired. The residential sector accounts for about 80% of Qatar's electricity consumption. In response to financial pressures, the Qatari government announced in 1999 that it would limit the provision of free electricity to Qatari-citizen households, with payment required for consumption above a set threshold.

In May 2000, the Qatari government took a major step towards privatization of its power sector. Assets owned by the Ministry of Electricity and Water (MEW) were transferred to the Qatar General Electricity and Water Corporation (QEW). QEW is 57% controlled by local investors and 43% controlled by the government.

The Ras Abu Fontas B-plant is the country's largest and newest power and water desalination plant. It has an electric generation capacity of 650 MW and water output of 33 million gallons per day. France's Alstom Power is currently building an additional 380-MW generation unit, which will be completed by mid-2002.

QEW awarded a contract in May 2001 for the Ras Laffan Independent Power and Water Project ("Ras Laffan IWPP"), which will be co-located with the Ras Laffan gas and industrial complex. The plant will have a generating capacity of 750 MW when completed in 2004, with the first 400 MW scheduled to be operational by early 2003. AES will own a 55% equity stake in the project, with QEW holding 45%.

Sources for this report include: CIA World Factbook 2000; Dow Jones News Wire service; Economist Intelligence Unit ViewsWire; Gulf News; Hart's Middle East Oil and Gas; International Market Insight Reports; Oil and Gas Journal; Petroleum Economist; Petroleum Intelligence Weekly; U.S. Energy Information Administration; WEFA Middle East Economic Outlook; World Gas Intelligence.

COUNTRY OVERVIEW**Head of State:** Sheikh Hamad bin Khalifa al-Thani**Independence:** September 3, 1971 (from United Kingdom)**Population (2000E):** 744,000**Location/Size:** Persian Gulf/4,416 square miles, slightly smaller than Connecticut**Major Cities:** Doha (capital), Umm Said, Dukhan, al-Khawr**Languages:** Arabic (English widely spoken)**Ethnic Groups:** Arab (40%), Pakistani (18%), Indian (18%), Iranian (10%), other (14%)**Religion:** Muslim (95%)**Defense (8/98):** Army (8,500), Navy (1,800), Air Force (1,500)**ECONOMIC OVERVIEW****Currency:** Qatari Riyal**Market Exchange Rate (8/01):** US\$1 = 3.64 Qatari riyals**Nominal Gross Domestic Product (2000E):** \$10.6 billion **(2001E):** \$11.5 billion**Real GDP Growth Rate (2000E):** 12.0% **(2001E):** 5.8%**Inflation Rate (consumer prices) (2000E):** 2.3% **(2001E):** 2.7%**Current Account Balance (2000E):** \$4.4 billion **(2001E):** \$4.0 billion**Major Trading Partners:** Japan, United Kingdom, United States, Italy, Germany, France, South Korea**Merchandise Exports (2000E):** \$10.0 billion**Merchandise Imports (2000E):** \$5.8 billion**Major Export Products:** Crude oil, LNG**Major Import Products:** Machinery and transport equipment, manufactured goods, food and live animals**External Debt (2000E):** \$7.8 billion **(2001E):** \$7.5 billion**ENERGY OVERVIEW****Minister of Energy and Industry:** Sheikh Abdullah bin Hamad al-Attiyeh**Proven Oil Reserves (1/1/01E):** 13.2 billion barrels**Oil Production (2000E):** 863,000 barrels per day (bbl/d), of which 702,000 bbl/d was crude oil**OPEC Crude Oil Production Quota (effective 9/1/01):** 601,000 bbl/d of crude oil (not including condensate)**Natural Gas Liquids Production (2000E):** 125,000 bbl/d**Oil Consumption (2000E):** 67,000 bbl/d**Net Oil Exports (2000E):** 806,000 bbl/d**Crude Oil Refining Capacity (1/1/01E):** 57,500 bbl/d**Natural Gas Reserves (1/1/01E):** 396 trillion cubic feet (Tcf)**Natural Gas Production (1999E):** 848 billion cubic feet (Bcf)**Natural Gas Consumption (1999E):** 562 Bcf**Net Natural Gas Exports (1999E):** 286 Bcf**Electric Generation Capacity (1/1/99E):** 1.5 gigawatts**Electricity Production (1999E):** 7.6 billion kilowatthours**ENVIRONMENTAL OVERVIEW****Total Energy Consumption (1999E):** 0.7 quadrillion Btu* (0.18% of world total energy consumption)**Energy-Related Carbon Emissions (1999E):** 9.9 million metric tons of carbon (0.16% of world total carbon emissions)**Per Capita Energy Consumption (1999E):** 995.6 million Btu (vs. U.S. value of 355.8 million Btu)**Per Capita Carbon Emissions (1999E):** 14.2 metric tons of carbon (vs. U.S. value of 5.5 metric tons of carbon)**Energy Intensity (1999E):** 71,114 Btu/\$1990 (vs U.S. value of 12,638 Btu/\$1990)****Carbon Intensity (1999E):** 1.0 metric tons of carbon/thousand \$1990 (vs U.S. value of 0.19 metric tons/thousand \$1990)**

Sectoral Share of Energy Consumption (1998E): Industrial (81.8%), Transportation (16.5%), Commercial (1.5%), Residential (0.2%)

Sectoral Share of Carbon Emissions (1998E): Industrial (80.4%), Transportation (18.0%), Commercial (1.4%), Residential (0.2%)

Fuel Share of Energy Consumption (1999E): Natural Gas (84.4%), Oil (15.6%), Coal (0.0%)

Fuel Share of Carbon Emissions (1999E): Natural Gas (85.0%), Oil (15.0%), Coal (0.0%)

Renewable Energy Consumption (1998E): 0.04 trillion Btu* (50% decrease from 1997)

Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified April 18th, 1996). Not a signatory to the Kyoto Protocol.

Major Environmental Issues: limited natural fresh water resources are increasing dependence on large-scale desalination facilities.

Major International Environmental Agreements: A party to Conventions on Biodiversity, Climate Change, Hazardous Wastes and Ozone Layer Protection. Has signed, but not ratified, Law of the Sea.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

**GDP based on EIA International Energy Annual 1999

OIL AND GAS INDUSTRIES

Organization: Qatar General Petroleum Corporation (QGPC) - exploration and production; National Oil Distribution Company (NODCO) - refining and distribution; Qatar Petrochemical Company (QAPCO) - petrochemical production; Qatar Fertilizer Company (QAFCO) - fertilizer production; Qatar Liquefied Gas Company (Qatargas) and Ras Laffan LNG Company (Rasgas) - production and marketing of liquefied natural gas (LNG)

Major Foreign Oil Company Involvement: BP Amoco Arco, Chevron, Enron, Exxon, Gulfstream, Maersk, Marubeni, Mitsui, Mobil, MOL, Occidental, Phillips Petroleum, TotalFinaElf, Wintershall

Major Ports: Umm Said, Ras Laffan

Producing Oil Fields (production - bbl/d)(1999E): Dukhan, Id al-Shargi North Dome, Bul Hanine, Maydan Mahzam, al-Shaheen, al-Rayyan, and al-Khalij

Major Pipelines: Dukhan-Umm Said, an offshore network connecting Halul Island to al-Khalij, Bul Hanine, and Maydan Mahzam, and Das Island (U.A.E.)-al-Bunduq

Major Refineries (capacity - bbl/d): Umm Said (57,500)

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